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THE BALTIMORE MEETING OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

By WM. R. BLAIR, Research Director. Dated Mount Weather, Va., January 14, 1909.

Of the papers given before the American Physical Society and Section B of the American Association for the Advancement of Science three were of sufficiently direct interest to meteorologists to be reviewed here. Prof. R. DeC. Ward's paper on the cyclonic unit in climatological investigations was withdrawn from the program of the Geographical Section.

The paper on the diurnal variations in the intensity of the penetrating radiation present at the surface of the earth by

¹ See notice of Association of American Geographers.

A. Galline was read by Professor McLennan of Toronto University. The experimental work on which this paper was based was undertaken because work done by Strong and one or two other experimenters seemed to indicate: 1. That the air and not the earth was the source of the radiation in question; and 2. That the radiation had a diurnal variation in intensity. The Wilson electroscope was used in the experiments. Several series of data were shown in which measurements were made of the conductivity of the air near the surface (1) of the earth, and (2) of the lake (on the ice). It was found that the value of the conductivity of the air over the lake was consistently less than 50 per cent of that over the earth's surface. This result showed, Professor McLennan thought, that the source of the penetrating radiation was in the earth rather than in the air, the reason for the lower values over the lake being the screening effect of the water. Laboratory experiments on the screening effects of water had also been made in support of this view. Other series of data showing hourly observations on the conductivity of the air for periods of twenty-four hours showed the variations in its value during any one day were never greater than the errors of the observations themselves and plots of these data gave no indication of any periodic variation whatever.

The two sets of data above mentioned are remarkably consistent and seem to support each other and the conclusion that the earth is the source of the penetrating radiation and that the radiation does not have a diurnal variation in intensity sufficiently marked to be detected with the apparatus used, i. e., if such a variation exists it is less than 2 per cent of the total radiation.

Doctor Bauer, of the Carnegie Institution, made an eloquent plea for terrestrial and cosmical physics. He set forth interesting and practical problems in this field of applied physics and contrasted the attention given it in the European countries and our own. In England, for example, a very considerable part of the program at such a meeting as the one before which the plea was being made would be devoted to terrestrial and cosmical physics, while here a very small number of papers dealing with subjects in this field appear. A separate section in the American Association for the Advancement of Science was not advocated. The purpose of Doctor Bauer's address was to commend to the men and the laboratories of our universities the above-mentioned problems.

In the nature of things such a plea as this could not help the cause much, if any, when presented to men who have chosen other lines of work and have come together to exchange ideas with those working in the same related fields as themselves. Some of us at work in this particular field of applied physics find it most interesting and do not feel that it needs this sort of plea. We can not expect all physicists to be interested in it, but to those who are or may become so the best inducement for them to take up its problems is the presentation from time to time of the work itself as it develops.

The upper inversion in the atmosphere was again spoken of by Prof. W. J. Humphreys. This time no reference was made to the moisture content of the inversion layer. It was assumed that the base of the upper inversion marks the upper boundary of vertical currents in our atmosphere. This is the opinion held by Teisserenc de Bort and has been given by him as the cause of the temperature inversion. Others hold the presence of vertical currents below the coldest point reached and their absence above it to be a necessary result of the temperatures obtaining. The probable mean temperature of the effective radiating surface of the earth, which Abbot and Fowle put at fully 4,000 meters above sea-level, has been determined by them to be 263° absolute temperature or -10° C. (14° F.). Using this result with the above consideration Professor Humphreys computed the temperature at the turning point in the gradient, i. e., at the base of the upper inversion.

layer. The result obtained in the case taken was in good agreement with the experimental data.

It must be borne in mind that, while the base of this layer seems always to be quite well marked, its temperature varies by as much as 20° C. in a day or two and the altitude at which it is found by as much as 1,000 meters or about 2½ miles in the same time.

THE BALTIMORE MEETING OF THE ASSOCIATION OF AMERICAN GEOGRAPHERS.

At the meeting of the Association of American Geographers held at Baltimore, Md., January 1 and 2, 1909, the following papers of interest to our readers were presented:

Mr. A. Lawrence Rotch spoke on the temperature at great heights above the American Continent.

Prof. R. DeC. Ward, on the cyclonic unit in climatological investigations, as follows:

Climatology has been too much concerned with monthly, seasonal, and annual averages. These summaries being based on final and definite periods, do not bring out the variations of the climatic elements under cyclonic and anticyclonic control, yet the irregular cyclonic and cyclonic changes are the very ones which most affect man. An important addition to the usual climatic summaries would be the introduction for all regions in which the cyclonic or storm control of weather conditions is characteristic, of the cyclonic unit, so that, for example, the average duration and value of cyclonic ranges of temperature in the several months, or the proportion of rain and snowfall received from cyclonic storms, or from local thunderstorms, might be determined.

Prof. Ellsworth Huntington on the climate of the historic past in the Americas, to appear in the next number of the MONTHLY WEATHER REVIEW.

Mr. Henry Gannett spoke on the climate of Cuba.

On December 31, 1908, Prof. Albrecht Penck of the University of Berlin, Kaiser Wilhelm Exchange Professor, gave a lecture on "The relation between climate, soil, and man," of which we hope to print an abstract in a later number.—C. A., jr.

NOTES FROM THE WEATHER BUREAU LIBRARY.

C. FITZHUGH TALMAN, Librarian.

JOSEPH MARIA PERNTER, 1848-1908.

We regret to report the death of the eminent Austrian physicist and meteorologist, Hofrat Prof. Dr. Josef Maria Pernter, on December 20, 1908, at Arco, after a long and painful illness. Professor Pernter was the director of the Austrian Central Institution for Meteorology and Geodynamics, Hohe Warte, Vienna; a member of the International Meteorological Committee, and Vice President of the Imperial Royal Austrian Society for Meteorology. He was born March 15, 1848, at Neumarkt, in the Tyrol, was educated at Innsbruck and Vienna, and has past most of his life in the service of the Austrian Central Institution for Meteorology, of which he became director in 1897, on the retirement of Hann. While his writings, published mostly as memoirs and notes in the scientific journals, have covered a wide range of meteorological subjects, his favorite field was atmospheric optics. In 1902 he began the publication of his "Meteorologische Optik," announcing that the work would be completed, in four parts, within a year. This expectation was unfortunately not realized, and but three parts, comprising 558 octavo pages, have been published to the present time. We are glad to learn, however, thru a private letter, that the completion of this important work, which is the only modern treatise covering the whole field of atmospheric optics, has been undertaken by Dr. Felix Exner, who was one of the late Professor Pernter's assistants at Vienna.

THE RAINFALL OF ITALY.¹

It will be remembered that at the Paris meeting of the International Meteorological Committee, in 1907, special promi-

¹ Eredia, Filippo. Le precipitazioni atmosferiche in Italia dal 1880 al 1906. Roma, 1908. (Estratto dagli Annali dell'Ufficio Centrale Meteorologico e Geodinamico italiano, vol. 25, parte 1, 1905.)

nence was given to the question of compiling and publishing the data collected over a long period of years by the meteorological services of the world. A list of the publications of this character already issued or in contemplation was given in an appendix to the report of the meeting, and constitutes a bibliography of great value to meteorologists and climatologists.

Under the head of Italy it was announced that a compilation of the precipitation data embracing the period 1880-1905 was in preparation. This work, which has now appeared, is a folio volume of 315 pages, together with seventeen colored plates showing the normal monthly, seasonal, and yearly distribution of rainfall over the whole of Italy, including Sicily and Sardinia. The tables give for each of 215 stations the monthly amount of rainfall and frequency of rainy days (i. e., days with 0.1 millimeter or more) during every year of observation within the period stated. All of these stations have long records, almost or quite coextensive with the period under discussion, hence no reductions have been applied to render the series homogeneous as to time. Other features of the work are a description of the annual march of the amount and the frequency of precipitation, six types of each being distinguished, and a discussion of the influence of topography upon the amount of precipitation.

The author, Dr. Filippo Eredia, has taken great pains to correct doubtful figures by correspondence with the observers, and he states that the figures he gives are to be considered authoritative in the case of discrepancies between this and earlier publications. The principal object of the present work is to bring out the geographical distribution of the rainfall in Italy; another work, now in preparation, will present statistics covering a longer period of time and exhibit especially the variability of the rainfall.

WORLD-WIDE RELATIONS OF THE INDIAN MONSOON RAINFALL.

The Annual Report for 1906-7 of the Board of Scientific Advice for India discusses *inter alia* the researches lately made into the connection between meteorological conditions in various parts of the world in the period preceding the Indian monsoon, and the amount of rainfall therein to be expected. A study of the statistics at present available seems to show that the conditions most closely associated with abundant monsoon rains are: low pressure at Mauritius in the preceding May, deficient subequatorial rainfall in May as given by Zanzibar and the Seychelles, deficient snowfall in May, and high pressure in India during the previous year. A formula has been worked out for calculating the monsoon rainfall departures, and on applying this to successive years from 1875 onward it is found that of the years with a forecasted departure of more than one inch, the sign of the departure has been correctly estimated in twenty cases out of twenty-four. An important relationship seems to have been established between pressure at Mauritius and the position of the trough of low pressure in upper India in June, July, and August.

The report also refers to results of investigations of the upper air by means of kites. On July 17, 1907, the highest kite ascent yet made in India (12,000 feet) was effected at Belgaum with good results, but soon afterwards the conditions became prohibitive of further attempts. The dry layer which had sometimes been found to occur in 1906, at heights between 2,500 and 8,300 feet, was found only once in 1907 at a height of about 5,000 feet. Kite flying during the monsoon has proved more difficult than had been anticipated, and work with sounding balloons has also to encounter obstacles. It has shown, however, that tho there is always a large westerly component in the upper air current above Simla, it is not so constant either in direction or velocity as might have been imagined.—*Geographical Journal*, January, 1909.

BRITISH NATIONAL ANTARCTIC EXPEDITION, 1901-1904.

The Royal Society has published, in a substantial and handsome volume, the chief part of the results of the meteorologi-